

WHAT IS CLAIMED IS:

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1. An omniazimuthal visual system, comprising:
- an optical system capable of obtaining an image of 360° view field area therearound and capable of central projection transformation for the image;
 - an imaging section for converting the image obtained through the optical system into image data;
 - an image transformation section for transforming the image data into display data;
 - a display section for displaying a transformed image based on the display data from the image transformation section; and
 - a display control section for controlling the transformed image to be displayed on the display section, wherein the image transformation section includes
 - at least one buffer memory for temporarily storing the image data and the display data,
 - an arithmetic/logic circuit for performing coordinate transformation when the image data is transformed into the display data,
 - a lookup table of a trigonometric function for use in the arithmetic/logic circuit, and
 - a CPU for controlling the at least one buffer

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memory, the arithmetic/logic circuit, and the lookup table.

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2. An omniazimuthal visual system according to claim 1, wherein the image transformation section includes any of a function for transforming the image data into the display data for generating a panoramic image, a function for transforming the image data into the display data for generating a perspective image, a function for determining a transformation region of the image data, a zoom-in/zoom-out function, and a pan/tilt function.

3. An omniazimuthal visual system according to claim 2, wherein the image transformation section transforms the image data which has undergone zoom-in/zoom-out processing by the zoom-in/zoom-out function or pan/tilt processing by the pan/tilt function into the display data for generating a panoramic image or the display data for generating a perspective image.

4. An omniazimuthal visual system according to claim 1, wherein the arithmetic/logic circuit is formed only by linear operation circuits.

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5. An omniazimuthal visual system according to claim 1, wherein:

the optical system includes a hyperboloidal mirror having a hyperboloidal shape of one sheet of a two-sheeted hyperboloid;

a rotation axis of the hyperboloidal mirror is identical with an optical axis of an imaging lens included in the imaging section; and

a first principal point of the imaging lens is located at a focal point of the hyperboloidal mirror.

6. An omniazimuthal visual system according to claim 1, wherein:

the optical system includes a plurality of mirrors each having a shape of a surface of revolution, the plurality of mirrors including first and second mirrors; and

the optical system is structured such that

the rotation axis of the plurality of mirrors is identical with an optical axis of an imaging lens included in the imaging section,

a first principal point of the imaging lens is located at a focal point of the second mirror, and light which travels toward a focal point of

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the first mirror is reflected by the first mirror and, thereafter, reflected by the second mirror so as to reach the first principal point of the imaging lens included in the imaging section.

7. An omniazimuthal visual system according to claim 1, wherein the imaging section is a digital imaging section for transforming the image into digital image data.

8. An omniazimuthal visual system according to claim 1, further including an image recording section for recording an output from the imaging section, wherein the image recording section is a digital recording section.

9. An omniazimuthal visual system according to claim 1, wherein the CPU includes a parallel operation function for controlling the display control section, the image transformation section and the display section.

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